Institute of Cruise Ship Medicine
Blood Transfusion Protocol for Shipboard Management of Catastrophic, Non-Compressible Hemorrhage

Patient presents with active; non-compressible bleeding:

- > than 4 hours will elapse till transfer to appropriate shoreside medical facility
- Hb < 10.0 grms/d/l

Hemodynamically Stable

INITIATE:

- ICU level monitoring
- IV fluid to maintain MAP> 75 mmHg (Permissive Hypotension)
- 4 hrly CBC/FBC/INR / Ionized Calcium
- Alert Captain
- Consider Tranexamic Acid (TXA) (Note 2)
- Consider Vitamin K if on warfarin
- Complete Eldon card screening of patient
- If later than 17.00 hrs local time call for blood donors (see Note 1 below)
- Routine disembark to shoreside hospital at next port/avoid helicopter use

Develops Hemodynamic Instability

Hemodynamically Unstable

INITIATE:

- ICU level monitoring
- 2 x large bore IV's with IV fluid to maintain MAP > 75 mmHg
- Alert Captain
- Call Corporate Med Ops Hotline
- 2 hrly CBC/FBC/INR/Lactate / Ionized Calcium
- Administer Tranexamic Acid (TXA) (see Note 2 below)
- Administer Vitamin K if on warfarin
- Complete Eldon card screening of patient
- Call for donors (see Note 3 below)
- Screen donors and immediately administer first unit of Group O negative fresh whole blood (FWB)
- RE-ASSESS AFTER 1st UNIT OF FWB

If still Bleeding and/or Hemodynamically Unstable

- Continue ICU level monitoring
- Administer further two units of Group O negative FWB as rapidly as patient condition can tolerate
- Evaluate urgent MEDEVAC options with Captain/MED OPS/Notify CareTeam
- Risk of helicopter transport acceptable -prefer disembark in port
- Send 4th unit with patient to run during MEDEVAC process

Routine Medevac

Avoid Helicopter

Urgent Medevac Risk of Helicopter Acceptable

Medical disembark to hospital with:

- Endoscopy/general surgical capability
- ICU level care
- Availability of screened, cross matched blood
- Notify MedOps/CareTeam of receiving hospital

Note on use of Calcium Chloride

If serum ionized Calcium is < than 4.2 mg/dl then consider administering IV Calcium Chloride 10mls of 10% solution over 30 minutes

Note 1

Consideration should be given to ensuring that identified Group O negative or O positive donors can be contacted should they be required to report to medical center to donate blood, without the need for ship-wide public address announcements after 21.00 hrs local time.

Note 2

A loading dose of Tranexamic Acid (Cyklokapron) should be mixed 1 gram in 100 ccs of 0.9% normal saline and administered over 10 minutes. (no faster than 100mgs/min) If a maintenance infusion is required a further 1.0 gram is diluted in 100 ccs of 0.9% normal saline and administered over 4 hours.

Use of Tranexamic Acid in stable patient requires risk/benefit analysis, i.e. risk of continuing bleeding vs inducing thrombotic event.

Note 3

Compatible Donor Request Hierarchy

1. Sexual partners
2. Male guests with blood donor cards
3. Male guests without blood donor cards
4. Female donors with blood donor cards
5. Medical team members
6. Crew

Note: blood donated by genetically related family members increases risk of Graft vs Host Disease. Female donors increase risk of Transfusion Related Acute Lung Injury (TRALI). Only take one unit from each donor, after ensuring that the donor is not already anemic.